

from the furniture. However, the issues surrounding the exposures at this stage are essentially the same issues involved with the exposure of the ultimate consumer of the product, and so will not be discussed in this section. Moreover, most upholstered furniture will be packaged in some way during the distribution process to protect the furniture from dirt, water, and other damage before it reaches the ultimate consumers. This packaging (e.g., boxes or plastic wrap) will also serve to limit worker exposure to the furniture during distribution.

## Consumer

An item of upholstered furniture is likely to remain in a consumer's home for several years at a minimum. Moreover, when consumers dispose of an item of furniture they will likely replace it with another item. Therefore, if the standard were implemented, consumers will be exposed to furniture designed to meet the standard throughout their lives. Furthermore, some consumers, especially small children, may "mouth" parts of upholstered furniture and, therefore, may be exposed orally to any FR chemicals that can migrate from the fabric to the consumer. Consumers may also inhale dust or other particles that are released from the furniture through normal use and that may contain FR chemicals. The Directorate for Health Sciences considered exposures to consumers in its assessment of FR chemicals.<sup>8</sup>

Some upholstery fabric is sold to reupholsterers, decorators, and retail fabric outlets that primarily serve retail consumers. Consumers may be exposed to these fabrics at this stage of the production process when they examine the fabric in the retail outlets or decorator or reupholster showrooms. In some cases their exposure may be limited to the exposure from examining the swatches of fabric in sample books. However, in some cases, the consumers may take larger samples of the fabric to their homes to see how the design or color pattern fits with the decor in their homes. The consumer would likely be exposed to the fabric dermally while examining the fabric as well as through inhalation, if dust or fibers impregnated with the flame retardant chemicals are released as the consumer unfolds the fabric, drapes it over their furniture, and refolds it to return to the store.

If an FR chemical used in upholstery fabric is toxic, could migrate from the fabric in sufficient quantity, and is otherwise bioavailable, then the risk of harm to the consumer is a possible adverse environmental impact that needs to be considered. Depending on the frequency with which the chemical causes harm under these conditions and the severity of the harm, the impact may be significant. For example, a chemical that causes only a minor rash, infrequently, to a small number of people, may not be considered a significant adverse environmental impact. However, if the same rash affected a large number of people, it could be considered a significant impact. A more severe harm may be considered a significant adverse impact even if only a small number of people were affected.

If an FR chemical easily migrates from a fabric the durability of the FR treatment may be compromised. Therefore, FR chemicals that easily migrate from upholstery fabric are not likely to be used to meet the standard, especially if the standard includes a durability test, such as a rinse or wash test. This may serve to limit consumer exposure to FR chemicals in upholstery fabric.

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<sup>8</sup> Michael A. Babich and Treye A. Thomas, "CPSC Staff Risk Assessment of Flame Retardant Chemicals in Residential Upholstered Furniture," Directorate for Health Sciences, Consumer Product Safety Commission, (22 March 2001). Hereafter cited "Babich and Thomas."

Even if some FR chemicals can cause harm if used in upholstered furniture, the standard will not necessarily have an adverse impact on consumer safety so long as other less toxic chemicals can be used. At the request of the CPSC, the National Academy of Sciences (NAS) conducted a study of the toxicological risks of 16 specific chemicals that are frequently used as flame retardants and have been suggested as probable candidates for use in upholstery fabrics. Of those 16 chemicals, the NAS, using worst-case assumptions, found that eight chemicals could be used in upholstered furniture with minimal toxicological risk to consumers. These chemicals are:

- hexabromocyclododecane,
- decabromodiphenyl oxide,
- alumina trihydrate,
- magnesium hydroxide,
- zinc borate,
- ammonium polyphosphates,
- phosphonic acid (3-[[hydroxymethyl] amino]-3-oxopropyl) - ,dimethyl ester,
- tetrakis hydroxymethyl phosphonium salts (chloride salts).

The NAS concluded that more information was required on the other eight chemicals with regard to the likely exposure and toxicity before any conclusions could be made regarding the level of risk that would be associated with the use of these chemicals in upholstered furniture. The NAS did not conclude that these chemicals were too risky to be used in upholstered furniture, only that there was insufficient information regarding the risk that these chemicals would present to make any conclusions. The eight chemicals for which the NAS recommends more research are:

- antimony trioxide,
- antimony pentoxide and sodium antimonates,
- calcium and zinc molybdates,
- organic phosphonates (dimethyl hydrogen phosphite),
- tris (monochloropropyl) phosphates,
- tris (1,3-dichloropropyl-2) phosphate,
- aromatic phosphate plasticizers (tricresyl phosphate), and
- chlorinated paraffins.

The CPSC staff also considered the potential risk to consumers from selected FR chemicals.<sup>9</sup> These chemicals included: antimony trioxide (AT); cyclic phosphonate esters (CPE) (also known by the tradename Antiblaze N/NT<sup>®</sup>); decabromodiphenyl oxide (DBDPO); 2-ethylhexyl diphenyl phosphate (EHDP); hexabromocyclododecane (HBCD); phosphonic acid, (3-[hydroxymethyl] amino)-3-oxopropyl)-, dimethyl ester (PA) (sold under the trade name Pyrovatex<sup>®</sup>); tetrakis (hydroxymethyl) phosphonium chloride (THPC) (Proban CC<sup>®</sup>); and tris (1,3-dichloropropyl-2) phosphate (TDCP) (Fyrol FR-2<sup>®</sup>). The CPSC staff concluded that at least four of the FR treatments would not present a hazard to consumers, as defined by the Federal Hazardous Substances Act (FHSA), including CPE, DBDPO, HBCD, and PA. EHDP would probably also comply with the FHSA. Based on this risk

<sup>9</sup> Babich and Treye (22 March 2001).

assessment, EHDP might present a hazard only if the treated fabric is exposed to dry cleaning fluids. However, migration data are needed to confirm the conclusions regarding CPE and EHDP.

The staff also concluded, TDCP is likely to be hazardous regarding both cancer and non-cancer health effects, although data on migration in liquids and emissions into air are needed to confirm this conclusion. Additional data are needed to determine whether exposure to airborne dusts containing AT could be hazardous to consumers. Additional information is needed to assess the potential risks from THPC-treated fabrics.

CPSC staff expects that phosphonic acid (e.g., Pyrovatex) and tetrakis hydroxymethyl phosphonium salts (e.g., Proban), which the NAS study indicates can be safely used on upholstered furniture, are likely to be used for upholstery fabrics that require immersion FR treatments. Decabromodiphenyl oxide is widely used in FR-backcoatings to meet the U.K. upholstered furniture standard. The NAS study indicates that decabromodiphenyl oxide can be safely used; however, it is usually used only in conjunction with antimony trioxide, for which the NAS concluded more information was required.

Some people have expressed concerns about the potential of the standard to increase the toxicity of the smoke in house fires. This increased toxicity was presumed to result from the combustion byproducts of the flame-retardant chemicals used to meet the standard that may occur if a house fire occurred. While controlled incineration of treated furniture should minimize the release of toxic byproducts, an uncontrolled house fire could cause very toxic chemicals to be released such as polyhalogenated furans and dioxins.<sup>10</sup>

The evidence available to the staff does not indicate that the addition of flame retardant chemicals to upholstered furniture fabric will significantly increase the toxicity of the smoke produced during house fires. The "smoke" from house fires is already very toxic. Probably the most hazardous chemical released during house fires is carbon monoxide. Other toxic chemicals are produced in house fires when materials such as polyvinyl chloride plastics, foams, paints, and so forth are burned. Moreover, the same fire retardants that are likely to be used in upholstered furniture are already widely used in other products likely contained in houses. For example, bromine and antimony-based flame-retardants are often used in the plastic cabinets of television sets and computer monitors. Even though the use of flame-retardants on upholstered furniture could add toxic chemicals to the smoke during a house fire, this increase is not likely to constitute a significant increase in the amount of toxic chemicals produced in a given house fire.

On the other hand, since the standard would reduce the incidence of house fires, there would be a beneficial impact on the environment. As already stated, the smoke from a house fire is toxic whether or not the furniture was treated with flame retardant chemicals. Therefore, if the standard were effective there should be less of this pollution produced. Moreover, fighting house fires typically involve the release of substantial amounts of water. Water used for fighting fires is contaminated with various pollutants that are created in house fires. This water may carry these pollutants directly into the

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<sup>10</sup> Polyhalogenated furans and dioxins, for example, can be formed when some bromine-based flame-retardants are burned under conditions that may occur during a house fire. However, such furans and dioxins are released during all combustion processes regardless of the presence of FR chemicals.

environment and contaminate streams, rivers, and ground water. Such pollution could be reduced to the extent that fewer fires occur.

An item of upholstered furniture will eventually be disposed. How the disposal affects the environment is dependent upon how the item is disposed. Incineration of some flame-retardants can, under some conditions, create toxic combustion products such as furans and dioxins. However, the FR chemicals that would be used in upholstered furniture would constitute a very small fraction of the materials that can create dioxins and furans when incinerated (e.g., flame retardants used in other items, polyvinyl chloride plastics, and so on). The contribution of FR chemicals that would be used in upholstered furniture should not significantly increase the production of furans, dioxins, or other toxic chemicals when incinerating garbage.

If an item of upholstered furniture is disposed of in a landfill, the environmental impact will be dependent upon what the break down products of the specific flame-retardant chemicals are and their fate in the environment. For example, some chemicals may tightly bond with soil and will not migrate much beyond the disposal sight. Other flame-retardant chemicals may break down into chemicals that are non-toxic. Other chemicals may be able to migrate to ground or surface waters. Whether the chemicals actually cause harm will depend on, among other things, how quickly the chemical breaks down, what the break down products are, whether the chemical bioaccumulates, and the concentration at which the chemical may have adverse impacts, if any. For example, decabromodiphenyl oxide (commonly used in FR backcoatings) may be bioaccumulative. However, the properties of the chemical make it unlikely that it would migrate to water if consumer products containing it were disposed of in a landfill.<sup>11</sup> If, in any subsequent investigation, it is found that a particular chemical may have an adverse impact if an item of upholstered furniture containing it is disposed of in a landfill, the EPA or other agency can take appropriate action to minimize the impact.

CPSC received several public comments that expressed concern that the standard may have unacceptable impacts on the aesthetic qualities of upholstered furniture. Among the concerns expressed was the FR-treated fabric would be too stiff or that the colors would be adversely affected. Some expressed concerns that some types of fabrics, such as silks and those with complex structures or piles may not be treatable and may disappear from the upholstery fabric market.<sup>12</sup> However, the standard allows for manufacturers to use a flame-blocking barrier as an alternative to ensuring the cover fabric passes the small flame tests. Therefore, manufacturers that use fabric that would be adversely affected by FR chemical treatments may opt to use flame-blocking barriers. This should ensure that the standard will not eliminate any upholstery fabric from use and will not have a significant impact on the aesthetic qualities of upholstered furniture.

## Regulatory Protections

The Environmental Protection Agency (EPA) has several regulatory tools at its disposal to protect the environment from significant harm. One of these tools is Section 5(a)(2) of the Toxic

<sup>11</sup> M. L. Hardy, "Disposal Considerations: Brominated Flame Retardants and Products Containing Brominated Flame Retardants," in CMA/BFRIP Brominated Flame Retardants Workshop : An Update on Current Regulatory and Research Activities, Chemical Manufacturers Association, Arlington VA, 12 November 1997.

<sup>12</sup> For example, see comments CF-1-13, CF-1-16, CF-1-18, and CF-1-20.

Substances Control Act. This section allows the EPA to promulgate Significant New Use Rules (SNURs) which require chemical manufacturers, importers, or processors to notify the EPA of their intent to distribute existing chemicals for specific new end uses. EPA may, based upon their evaluation of the data submitted by the manufacturer, by further regulation, establish controls to limit potential adverse impacts on the environment.

CPSC and the EPA established a joint staff working group to cooperate in the respective agencies' activities on upholstered furniture. EPA is developing a draft SNUR that could be proposed as a companion to any CPSC final regulation. A SNUR is a proposal-and-comment rulemaking procedure, but the SNUR becomes effective retroactively to its proposal date. In a letter to CPSC staff, dated 26 February 2001, the EPA noted that its review of any new use of an FR chemical being used in residential upholstered furniture would encompass manufacturing, processing, use, and disposal and they would consider industrial, occupational, residential, environmental, and other public exposures in determining the need for any controls on the use FR chemicals in residential upholstered furniture. The existence of such a SNUR should help the EPA and the CPSC to ensure that a small open flame standard for residential upholstered furniture does not have a significant adverse impact on the environment.

### **Conclusion**

FR chemicals are widely used, including uses in other consumer products. The upholstered furniture standard would increase the U.S. consumption of FR chemicals by less than 5 percent. CPSC staff do not have any reason to expect that using FR chemicals on upholstery fabric would have any more severe impact on the environment than that which occurs from their use in other applications. Since the standard would cause only a small increase in the consumption of FR chemicals, the standard should only slightly increase whatever impact the use of FR chemicals are already having on the environment. Moreover, the NAS concluded that several FR chemicals could be safely used on upholstered furniture. Among these chemicals were some chemicals that are commonly used in the United Kingdom to meet the UK upholstered furniture standard. A finding of "no significant impact" could be justified by the available evidence.

## Appendix:

### Environmental Analysis Screener

*(Based on the Final Report on Development of a Methodology for Environmental Impact Assessment* Under the requirements of the Federal Paperwork Reduction Act, agencies must estimate the burden of recordkeeping requirements of proposed rules. The rule recommended by the staff for metal core candlewicks and candles made with these wicks will require testing to ensure that the wire in the wicks do not exceed a trace amount of .06 percent lead by weight. In addition, this rule will require that the test results be maintained for 3 years subsequent to the products' importation or entry into commerce and be available within 48 hours of a Commission request.

Based on information developed in the course of this project, it is estimated that complying with the testing and recordkeeping requirements of the proposed rule will require an additional 40 hours per metal candlewick lot produced annually. We do not anticipate that domestic producers or distributors of metal candlewicks will conduct testing, since the content of the metal wire used in the candlewicks are analyzed in the course of the manufacturing of the metal. Since 5 to 15 lots of metal candlewicks are produced per year in the U.S., recordkeeping for the proposed regulation would require an estimated 200 to 600 hours per year.

Domestic producers, distributors, private labelers, and importers of candles would not have to conduct tests as long as they maintain copies of prior test results for the metal candlewicks used in their candles. It is estimated that this recordkeeping requirement may require approximately 40 hours per firm per year. The exact number of manufacturers and importers is not known and not every candle manufacturer utilizes metal core wicks. Based on information obtained from ReferenceUSA, there may be as many as 460 domestic producers of candles in the U.S. If there are an equivalent number of importers of candles, then the estimated number of hours for complying with the recordkeeping requirements of the rule for importers and domestic producers may be as high as 18,400 hours.

*to the Consumer Product Safety Commission, Bureau of Economic Analysis, November 13, 1975, by Battelle Columbus Laboratories.)*

#### 1: Production

(In this assessment, "production" is used to refer to the mining and manufacture of the flame-retardant chemicals, their incorporation into flame-retardant systems, the application of the flame-retardant systems to upholstery fabric, and the manufacture of upholstered furniture itself.)

1a. *Will the composition or proportion of raw materials used in production change?*

Yes. Upholstered furniture manufacturers and the related firms that manufacture or finish the upholstery fabric will increase their use flame-retardant chemicals.

**1a1.** *Does the new material present supply or problems?*

No. The standard is expected to result in a very small increase in the demand for flame-retardant chemicals, on the order of 5 percent of current consumption. The consumption of flame-retardant chemicals has been growing at around this rate annually in recent years.

**1a2.** *Will processes of obtaining the raw materials conflict with existing land use practices, plans, proposed plans, or property values?*

No.

**1a3.** *Will the processes of obtaining the raw materials affect associated industries?*

No.

**1a4.** *Does the cost of the material differ substantially from the cost of previously used material?*

Yes. Since furniture manufacturers will likely increase their use of flame retardant chemicals in applications where they are not now using flame-retardants, their material costs will increase.

**1a5.** *Will transportation systems (from field to processing plant) undergo change (i.e., volume, route, mode)?*

Yes. Some chemical formulators, especially those that primarily serve upholstery fabric manufacturers, will increase their use of flame retardant chemicals. Thus, there will be some small change in the volumes and routes of shipments of flame retardant chemicals. The mode of transportation is unlikely to be affected. Note: These impacts only apply to transportation from the manufacturer of the flame retardant chemical (i.e., the firm that processed the raw materials) to the formulators (i.e., the firms that take the flame retardant chemicals and produce the flame retardant systems, such as the backcoatings that will be applied to fabrics or the liquid in which fabrics will be immersed). It does not apply to the transportation of the raw materials to the facility where they are first processed into commercial chemicals (e.g., a facility that takes in antimony-containing sulfide ores and roasts the ores to produce antimony oxide). The standard is not likely to have an impact on the transportation of the raw materials to the plant where they are initially processed.

- 1a6.** *Will energy requirements of obtaining or transporting the material differ?*

Yes. The standard will increase the consumption of flame retardant chemicals by an average of 5 percent. This is likely to increase the extraction of the raw materials by a similar amount. This will entail a small increase in energy requirements.

- 1a7.** *Will the health and safety of employees involved in producing or transporting raw materials be affected adversely or beneficially?*

No.

- 1a8.** *Will the procurement of this material result in increased or additional emissions to the physical/chemical environment?*

Yes. All other things equal, the standard should result in an average increase in emissions of 5 percent. This assumes that the emissions in the extraction and processing of the raw materials are directly related to the volume extracted and processed.

- 1a9.** *Will the number or type of employees change due to the procurement or transportation of this material?*

No. At most the standard would have only negligible impact on the number of employees and no impact on the type of employees.

- 1a10.** *Will the procurement or transportation of this material aesthetically impact the environment (sight, odor, noise, etc.)?*

No.

- 1b.** *Will there be a change in the manufacturing process of converting the raw materials to the finished product?*

Yes. More fabric will be backcoated. Other fabrics will have other flame-retardant treatments, such as immersion. For fabric that is already finished or backcoated, flame-retardant chemicals will be added to the backcoating or other finishing processes. The fabric may have thicker backcoatings that may make the fabric more difficult to work with.

- 1b1.** *Will new technologies have to be developed due to the CPSC action?*

Yes. Flame-resistant technologies will have to be developed or modified for upholstered furniture. For many types of fabrics, the technology already exists.



For others, technology may have to be developed or modified. Because some characteristics of the fabric may change due to the fire resistant treatment (e.g., it may be thicker or more difficult to stretch) some technologies used to manufacture the furniture may have to be modified.

**1b2.** *Will the health/safety of employees be affected?*

Yes. The standard will introduce new chemicals into some workplaces. Some of these chemicals may be toxic. There are various laws, regulations, and practices in place that should minimize the hazard to workers, however.

**1b3.** *Will the number or type of employees necessary to process the product undergo substantial change?*

Yes. More employees may be needed for the fabric finishing operations.

**1b4.** *Will new by-products or residuals result from the process?*

No.

**1b5.** *Will the unit cost of processing differ?*

Yes. The flame-resistant treatments and associated activities, including extra processing of or disposal of hazardous wastes, will increase the unit costs.

**1b6.** *Will increased or additional emissions to the environment be a result of compliance with the CPSC action?*

Yes. The increased use of flame-retardant chemical systems will result in increased and additional emissions to the environment.

**1b7.** *Will related industries be affected by any required change in product processing?*

No. The only industries that should be affected by the standard are those that are directly involved with processing flame-retardant chemicals and manufacturing and finishing upholstery fabric and furniture.

**1b8.** *Will energy requirements to process or complete the product substantially increase or decrease?*

Yes. The standard may increase the energy requirements since some energy will be required to apply flame retardants to the fabric. Since the fabric may be heavier and stiffer, more energy may be required to transport it and work with it.

**1b9.** *Will compliance with CPSC action cause extended time delays or advances in processing?*

Yes. Treating the fabric with flame retardants will take additional time that is not now required.

**1b10.** *Will the processing of the product have aesthetic impacts on the environment?*

No.

**1b11.** *Will the proposed action necessitate a change in the location of processing facilities?*

Yes. Any change in location, however, is related only to the capability of individual facilities to complete the work. The standard is unlikely to necessitate any change from geographic region to another.

Matrix 1: Production

Possible Impacts	Assessed Impact Severity						
	Adverse Impact			Beneficial Impact			Negligible Impact
	Large	Medium	Small	Small	Medium	Large	
<b>Raw Materials</b>							
1a1 Availability			✓				
1a2 Land Use	●						✓
1a3 Associated Industries							✓
1a4 Cost							✓
1a5 Transportation Systems							✓
1a6 Energy Requirements	●						✓
1a7 Health/Safety	●	●					✓
1a8 Emissions			✓				
1a9 Employment							✓
1a10 Aesthetics							✓
<b>Processing</b>							
1b1 New Technologies		✓					
1b2 Health/Safety	●	●	✓				
1b3 Employment	●						✓
1b4 Residuals							✓
1b5 Cost		✓					
1b6 Emissions			✓				
1b7 Related Industries							✓
1b8 Energy Requirements			✓				
1b9 Time Delays/Advances	●		✓				
1b10 Aesthetics							✓
1b11 Location							✓

**Note:** The cells with the dark circles in the matrix indicate a level of severity for those particular impacts which may be in and of itself be sufficient to warrant the filing of an environmental impact statement.<sup>13</sup>

<sup>13</sup> M.L. Brown, W.R. Berhagan, B.D. Fitting. Final Report on Development of a Methodology for Environmental Impact Assessment to the Consumer Product Safety Commission, Bureau of Economic Analysis, November 13, 1975, by Battelle Columbus Laboratories.

## 2: Distribution

(In this assessment, "distribution" refers to the moving of the upholstered furniture from the furniture to the retail consumer, including its handling by various wholesalers, warehouses, retail outlets, and so on. It also refers to moving fabric from the fabric manufacturer to the consumer, for fabric that is sold to the consumer for reupholstering already manufactured furniture.)

2a. *Will the standard necessitate a change in the packaging of the product?*

No.

2b. *Will changes relative to the transportation of the product to the distributor/consumer become necessary?*

No

2c. *Will there be changes in the method of retailing (outlets)?*

No.

## 3: Consumption

3a. *Will the standard bring about changes in the consumer purchasing patterns?*

Uncertain.

3a1. *Will the action bring about a change in consumer composition for the product (i.e., different age group)?*

No.

3a2. *Will the price of the product influence the range or number of potential consumers to a larger degree than before the action?*

The standard will increase the retail price of upholstered furniture. This may cause consumers to reduce the amount of furniture they purchase (e.g., by holding on to an item of furniture for a longer period of time before replacing it). Consumers may also react by purchasing furniture of a lower quality.

3a3. *Will the longevity of the product be increased or decreased?*

Yes. The longevity of the upholstered furniture on average will increase slightly. This is due to the fact that the standard will prevent some fires that otherwise would have consumed the furniture.

**3a4.** *Will the action increase/decrease of the product?*

No. The utility consumers derive from upholstered furniture should be unchanged.

**3a5.** *Will the action impact foreign consumption of U.S. products in any way?*

Yes. The standard will cause the price of upholstered furniture made for domestic consumption to increase, which will make these products less competitive on the world market. U.S. manufacturers could probably manufacture furniture for export that does not meet the standard. However, there would probably be some costs involved in maintaining separate product lines: one for export that does not meet the standard and one for domestic sales that does meet the standard.

**3a6.** *Will manufacturers likely withdraw from the market thereby reducing selection for U.S. consumers?*

Yes. Some manufacturers may withdraw certain product lines from the U.S. market and some fabric manufacturers for which the upholstered furniture market is only minor market may at least temporarily withdraw from the market. Some foreign manufacturers may also withdraw from the U.S. market rather than meet the standard.

**3a7.** *Will the new product be less aesthetically pleasing to the consumer?*

Uncertain. Some fabric and furniture industry sources believe that some fabrics may not be suitable for flame retardant treatments and that backcoating some fabrics will adversely affect both the look and feel of the fabric. However, the barrier option should minimize any adverse impact.

**3b.** *Will there be changes in the actual consumption or use characteristics of the product due to CPSC action?*

Uncertain. Some furniture patterns or designs may disappear. If the flame-retardants have any health effects some consumer use of upholstered furniture may change.

**3b1.** *Will increased or additional residuals or emissions be associated with the product?*

Yes. Some flame-retardant chemicals used in the furniture fabric may be able to migrate from the fabric to the consumer.

**3b2.** *Will the action bring about an increase or decrease in the health/safety of consumers?*

Yes. By reducing fires the standard will increase the safety of consumers. If some flame-retardant chemicals used in the furniture are both toxic and bioavailable to the consumers, there may be some adverse health effects associated with the standard.

**3b3.** *Will there be a substantial alteration in energy required to use the product?*

No.

**3b4.** *Will the form of energy required for use change?*

No.

**3b5.** *Will there be resultant impacts on associated industries if product uses change over time?*

No.

**3b6.** *Is there likely to be an expansion/diminution of the number of uses or alternative uses of the product due to CPSC action?*

No.

Matrix3: Consumption

Possible Impacts	Assessed Impact Severity						
	Adverse Impact			Beneficial Impact			Negligible Impact
	Large	Medium	Small	Small	Medium	Large	
<b>Purchasing Patterns</b>							
3a1 Consumer Composition							✓
3a2 Price							✓
3a3 Longevity				✓			
3a4 Utility							✓
3a5 Foreign Consumption			✓				
3a6 Reduced Selection			✓				
3a7 Aesthetics							✓
<b>Consumption/Use of Product</b>							
3b1 Residuals/Emissions			✓				
3b2 Health/Safety			✓			✓	
3b3 Energy Requirment							✓
3b4 Energy Form							✓
3b5 Associated Industries							✓
3b6 Number of uses							✓

**4: Disposal**

4a. *Are changes expected in the type or amount of solid waste generated?*

No.

4b. *Are new or increased amounts of hazardous wastes generated?*

Yes. Some flame retardants are toxic and their eventual environmental fate should be considered in this analysis.

4b1. *Will there be a net gain or loss in total hazardous or toxic wastes resulting from the action?*

Uncertain. The increased use of flame retardants in upholstered furniture will increase the production of hazardous wastes. However, the standard should decrease the number of residential fires, which also produce hazardous wastes (both in the fire itself and in replacing the products consumed in the fire). We do not have sufficient information to determine the net effect on hazardous waste generation.

**Matrix 4b: Disposal**

Possible Impacts	Assessed Impact Severity						
	Adverse Impact			Beneficial Impact			Negligible Impact
	Large	Medium	Small	Small	Medium	Large	
<b>Hazardous Wastes</b>							
4b1 Hazardous/Toxic Wastes			✓	✓			



**TAB K**

## National Association of State Fire Marshals


[www.firemarshals.org](http://www.firemarshals.org)

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**GEORGE KEELEY**  
Keeley, Kuenn & Reid  
*General Counsel*

March 8, 1999

Donald S. Clark, Secretary  
Office of the Secretary  
Federal Trade Commission  
Sixth St. and Pennsylvania Ave., N.W.  
Washington, DC 20580

Ms. Sadye E. Dunn, Secretary  
Office of the Secretary  
U.S. Consumer Product  
Safety Commission  
Washington, DC 20207

Re: Petition for Rulemaking:  
Fire Hazard Warning Label on  
Certain Upholstered Furniture

Dear Mr. Clark and Ms. Dunn:

The National Association of State Fire Marshals files this joint petition for rulemaking with the Federal Trade Commission ("FTC") and the Consumer Product Safety Commission ("CPSC") pursuant to 16 CFR Part 1 and 16 CFR 1051. Reference hereafter to the "Commission" shall mean the FTC and the CPSC.

The National Association of State Fire Marshals ("NASFM") represents the most senior fire official of each of the 50 states and the District of Columbia. Our members typically have statutory responsibility for code enforcement, fire incidence data, training, fire investigation and other matters pertaining to public safety. As such, our organization carefully monitors commercial, regulatory and other developments that may impact the severity and frequency of fire losses.

CPSA 6 (b)(1) Cleared **FF 99-1**  
3/12/99  
No Mfrs/PrvtLbtrs or  
Products Identified  
X Excepted by *Petition*  
Firms Notified,  
Comments Processed.

CPSC/OFFICE OF THE SECRETARY  
1999 MAR - 8 D

### Background

In 1993, the National Association of State Fire Marshals petitioned the CPSC (Petition FP 93-1) to issue a flammability standard for upholstered furniture incorporating the requirements of three standards now in effect in the State of California. Specifically, the petition urged the Commission to issue a flammability standard incorporating the requirements of Technical Bulletins 116, 117 and 133, issued by the Bureau of Home Furnishings and Thermal Insulation of the State of California. (58 FR 42301).

These standards specify tests to measure the (a) resistance of components of upholstered furniture to ignition by small open-flame sources and cigarettes; (b) resistance of finished items of upholstered furniture to ignition by cigarettes; and (c) resistance of finished items of furniture to ignition from large open-flame sources. The California standards also contain labeling requirements.

In support of the petition, NASFM provided information about deaths and injuries from fires involving upholstered furniture in California and in the rest of the United States. The petition asserted that although deaths and injuries from fires involving upholstered furniture in the United States declined appreciably from 1980 through 1989, during the same period the numbers of deaths and injuries from upholstered furniture fires declined at a much faster rate in California.

NASFM provided data showing that the rate of fire deaths associated with upholstered furniture in the United States, excluding California, decreased from 4.97 per million people in 1980 to 3.04 per million in 1989, a decline of 39 percent. By comparison, in 1980 the rate of fire deaths associated with upholstered furniture in California was 1.14 per million people and in 1989 it was 0.41 per million, a decline of 64 percent.

Thus, according to the data, *non-Californians are over 7 times more likely to die in upholstered furniture fires than Californians*. In providing these data, NASFM is not in this petition advocating indirectly the adoption of California's upholstered furniture flammability standards. Here is our point: Particularly if it appears that American consumers outside of California are not as safe as Californians from upholstered furniture fires, shouldn't they at the very least be warned about the known fire hazards posed by these consumer items?

### Nature of the Hazard

A common consumer product application of polyurethane foam is its use in upholstered furniture. Upholstered furniture may be ignited by smoldering cigarettes,

small open flames (candles, matches and cigarette lighters, often as a result of child play), and large open flames when other household items are first ignited. Once ignited, non-fire resistant polyurethane foam (hereafter "polyurethane foam") burns rapidly, emitting large quantities of toxic gases such as carbon monoxide and cyanide. Polyurethane foam's rapid rate of intense heat release typically raises the room temperature to the point of flashover — that is, the point at which all contents of the room are ignited. Clearly, polyurethane foam poses a hazard, in effect making small fires very large, and very deadly, very quickly. The textiles used in upholstered furniture may ignite easily, but provide little fuel and energy to the fire by themselves.

### Scope of the Hazard

According to the United States Consumer Product Safety Commission's most recent estimates of fire loss, upholstered furniture and mattresses/bedding account for roughly 10 percent of America's 428,000 residential fires each year. Approximately 4,300 Americans are seriously injured in these fires. Serious burns often require years of hospitalization, multiple surgeries, and physical and emotional therapy.

Most telling, fires started in home furnishings containing polyurethane foam account for 16 percent of all residential fire deaths, making these items one of the most dangerous of all products under the CPSC's jurisdiction.

According to the CPSC, the following losses occurred as a result of 13,100 residential fires in 1996 involving upholstered furniture (1996 *Residential Fire Loss Estimates*):

#### Upholstered Furniture Fires

	<u>Open flame ignition</u>	<u>Smoldering ignition</u>	<u>Other Ignition</u>	<u>Total</u>
Deaths	90	470	90	650
Injuries	410	940	290	1,640
Property Damage	\$61 million	\$98 million	\$95 million	\$253 million

The Technology Exists to  
Make Furniture Safer From Fire

Upholstered furniture in nursing homes, hospitals, prisons and other institutional settings, as well as the seats of airplanes, automobiles, boats and other modes of transportation are required to meet flammability standards far more stringent than those required for furniture manufactured for the American home. Much of the time, these standards are met with polyurethane foam that is treated to resist ignition. The technology exists to make the foam, and, thus, the upholstered furniture that contains the foam, safer.

Manufacturers Are Aware of the Hazard

According to documents we have obtained (enclosed), foam producers generally provide warning notices with each batch of polyurethane foam provided to upholstered furniture manufacturers. We include one of the many available examples here:

<p style="text-align: center;"><b>WARNING</b> <b>All Polyurethane Foam Can Burn!</b></p> <p>In case of fire, serious personal injury or death can result from extreme heat, rapid oxygen depletion and the production of toxic gases. When ignited, polyurethane foam, like other organic materials, can burn rapidly and generate thick dark smoke and toxic gases leading to confusion, incapacitation, and even death.</p> <p>Do not expose polyurethane foam to any intense radiant heat or open flames, such as space heaters, open burning operation, cigarettes, welding operations, naked lights, matches, electric sparks or other intense heat sources.</p> <p>Depending upon the intended use of the polyurethane foam, suitable warnings should be passed on to the ultimate product users. (emphasis added)</p>
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*Notably, to our knowledge, these warning labels are not shared by the upholstered furniture manufacturers or their retailer customers with consumers who purchase furniture containing these products. This appears to us a gross failure to discharge the manufacturer/retailer's duty to warn.*

Commission Rule Needed to  
Compel Hazard Disclosure to Consumers

Danger and safety problems with products has compelled the Federal Trade Commission to adopt a disclosure doctrine to require warnings. Failure to warn users of products of dangers that might result from the use of the products has been found to be an unfair practice under section 5 of the Federal Trade Commission Act. For example, the failure of a manufacturer of gasoline engine powered tractors to disclose to customers that the tractors were subject to fuel geysering (forceful ejection of hot fuel through a loosened gas cap) was an unfair practice in violation of Section 5 of the FTC Act. *International Harvester Co.*, 104 FTC 949.

Turning to the CPSC, upholstered furniture is a "product" of "interior furnishing" as those terms are defined in sections 2(e) and 2(h) of the Flammable Fabrics Act, 15 USC 1191(e) and (h). The CPSC has authority under section 4(a) of the Flammable Fabrics Act to issue a "flammability standard or other regulation, including labeling" for a product of interior furnishing if the CPSC determines that such a standard "is needed to adequately protect the public against unreasonable risk of the occurrence of fire leading to death or personal injury, or significant property damage." 15 USC 1193(a). Clearly, the consuming public needs to be informed as to the extent of the fire hazard involved in the use of non-fire resistant polyurethane foam.

Requested Relief

The National Association of State Fire Marshals believes that the withholding of these warnings by manufacturers and retailers of residential upholstered furniture containing polyurethane foam is not in conformity with the FTC Act and the Flammable Fabrics Act. Therefore, NASFM requests:

1. The Federal Trade Commission and/or the Consumer Product Safety Commission to, by rule, require upholstered furniture manufacturers and retailers to affix a label to such furniture sold in the United States containing polyurethane foam in a conspicuous place, bearing precisely the same flammability warnings provided by the polyurethane foam producers; and

2. As an interim step, NASFM requests your agencies to commence a voluntary fire hazard disclosure program with upholstered furniture manufacturers and retailers, whereby such companies would voluntarily agree with the agencies to make

March 8, 1999

Page 6 of 6

adequate fire hazard disclosures to U.S. consumers pending the outcome of a decision on this petition for rulemaking.\*

3. Grant such other relief as is equitable and appropriate.

Respectfully submitted,



Rocco J. Gabriele

President

The National Association of State Fire Marshals

Also in support of this petition:

The International Association of Fire Fighters, AFL-CIO-CLC

Encls.

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\* For the record, in July 1998 NASFM wrote to several major retailers who sell upholstered furniture nationwide. In the letters we suggested that, for the reasons cited in this petition, the upholstered furniture they sell does not contain adequate consumer warnings of the potential fire hazards posed by polyurethane foam contained in the furniture. Unfortunately, to our knowledge, none of these companies has come forward voluntarily and agreed to pass along the warnings being issued by the polyurethane foam producers.



TAKES ON AIR AFTER UNWRAPPED

WARNING

POLYURETHANE FOAM IS FLAMMABLE!

DO NOT EXPOSE POLYURETHANE FOAM TO WELDING, SMOKING MATERIALS, NAKED LIGHTS, OPEN FLAMES, SPACE HEATERS, BURNING OPERATIONS, OR OTHER SUFFICIENTLY INTENSE CAUSES OF HEAT OR FLAMES.

IF IGNITED, POLYURETHANE FOAM CAN BURN RAPIDLY, RELEASING GREAT HEAT AND CONSUMING OXYGEN. IN AN ENCLOSED SPACE, THE RESULTING DEFICIENCY OF OXYGEN CAN PRESENT A DANGER OF SUFFOCATION TO THE OCCUPANTS. SMOKE AND GASES RELEASED BY THE BURNING FOAM CAN BE INCAPACITATING OR FATAL TO HUMAN BEINGS IF INHALED IN SUFFICIENT QUANTITIES.

characteristic of foam to eventually change color.  
er, this in no way affects its comfort or lasting quality.



# WARNING—FLAMMABLE FOAM

**NO FIRES • NO SMOKING • NO SPARK**

Improper handling of flexible polyurethane foam during storage and/or installation presents the risk of FIRE and resulting risks from SMOKE AND TOXIC GAS. Once ignited, polyurethane foams will burn rapidly releasing great heat, consuming oxygen at a high rate, and generating thick smoke and toxic gases. The resulting deficiency of oxygen will present a danger of

## SUFFOCATION AND DEATH to the occupants.

**Burning foam can be harmful or fatal to people.**

**After the fire is out, ensure no toxic gases remain before entering the fire area.**

899

## **WARNING**

Polyurethane foam is flammable. Do not use in welding, smoking, materials, or other operations involving open flames, sparks, heaters, burning, or operations.

Do not expose polyurethane foam to welding, smoking, materials, or other operations involving open flames, sparks, heaters, burning, or operations. Polyurethane foam can burn rapidly, releasing great quantities of heat and consuming oxygen. In an enclosed space, the resulting deficiency of oxygen can present a danger of suffocation to the occupants. Smoke and gases released by the burning foam can be incapacitating or fatal to human beings in quantities.

**RECTICEL FOAM CORP.**

# WARNING

## ALL POLYURETHANE FOAM CAN BURN!

In case of fire, serious personal injury or death can result from extreme heat, rapid oxygen depletion and the production of toxic gases. When ignited, polyurethane foam, like other organic materials, can burn rapidly and generate thick dark smoke and toxic gases leading to confusion, incapacitation or even death.

Do not expose polyurethane foam to any intense radiant heat or open flames, such as space heaters, open burning operation, cigarettes, welding operations, naked lights, matches, electric sparks or other intense heat sources.

Depending upon the intended end use of the polyurethane foam, suitable warnings should be passed on to the ultimate product users.

Warning Label Used By Reeves Foam.



SCO 000343

CARPENTER COMPANY, INC.  
5016 MONUMENT AVENUE  
P. O. BOX 27205  
RICHMOND, VIRGINIA 23261  
804 / 359-0800

OCTOBER 12, 1994



CONTINENTAL SILVERLINE  
710 NORTH DRENNAN  
HOUSTON, TX 77001

RECEIVED

OCT 17 1994

ATTENTION: JOHN ROBBINS

CONTINENTAL

You are probably aware that manufacturers and suppliers have a duty to warn their customers of the potential hazards of their products. In fulfilling our obligation, we affix a warning to packages of our urethane foam products that reads as follows:

W A R N I N G  
-----

URETHANE FOAM IS FLAMMABLE!

DO NOT EXPOSE URETHANE FOAMS TO OPEN FLAMES OR ANY OTHER DIRECT OR INDIRECT HIGH TEMPERATURE IGNITION SOURCES SUCH AS BURNING OPERATIONS, WELDING, BURNING CIGARETTES, SPACE HEATERS OR NAKED LIGHTS.

ONCE IGNITED, URETHANE FOAMS WILL BURN RAPIDLY, RELEASING GREAT HEAT AND CONSUMING OXYGEN AT A HIGH RATE. IN AN ENCLOSED SPACE THE RESULTING DEFICIENCY OF OXYGEN WILL PRESENT A DANGER OF SUFFOCATION TO THE OCCUPANTS. HAZARDOUS GASES RELEASED BY THE BURNING FOAM CAN BE INCAPACITATING OR FATAL TO HUMAN BEINGS IF INHALED IN SUFFICIENT QUANTITIES.

Please note that the warning applies to urethane foams in general, and it should not be construed that Carpenter Co. foam products are more hazardous than those of any other manufacturers. You should assume that all urethane foams are dangerous once ignited, even if they have been treated with a flame retardant.

We are enclosing a list of publications that gives more information on the flammability and toxicity characteristics of urethane foams and would be happy to discuss this with you should you so desire. We recommend that you take up this matter with

CARPENTER CO.  
5016 MONUMENT AVENUE  
P.O. BOX 27205  
RICHMOND, VIRGINIA 23261  
804 359-0800

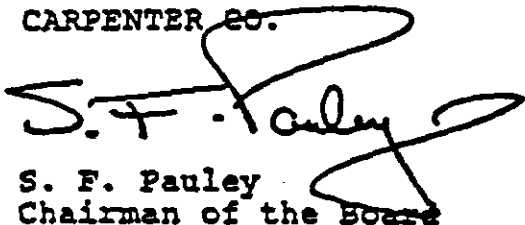
902

your fire insurance underwriters who are in a position to recommend appropriate actions for you to take with regard to your storage and use of urethane foams.

In addition, we also suggest that your lawyer advise you concerning your obligation to warn your customers. We believe that he will recommend that you consider attaching appropriate warnings to your finished products.

Yours truly,

CARPENTER CO.

A handwritten signature in dark ink, appearing to read "S. F. Pauley", with a large, stylized flourish extending from the end of the signature.

S. F. Pauley  
Chairman of the Board

SFP/crs/13

Enclosure

- "Large Scale Fire Tests", W. J. Wilson: Journal of Fire and Flammability, volume 7, page 112, (1976).
- "Fire Safety in the Home: Relative Toxicity of the Pyrolysis Products from Some Materials used in Home Furnishings and the Impact of the California Regulations", California Bureau of Home Furnishings Laboratory Report SP-76-5, (1976).
- "Oxidative Pyrolysis of Aircraft Interior Materials", Spurgeon Speitel, Feher: Journal of Fire & Flammability, volume 8, page 349, (1977).
- "Project RAPRA 3", Wood, Prager, Wilson: International Isocyanate Institute, (1977).
- "Project RAPRA 4, Project Moreton-2", Prager, Wood: International Isocyanate Institute, (1979).
- "Full Scale Burning Behavior of Upholstered Chairs", NBS Technical Note 1103, U. S. Dept. of Commerce, (1979).
- "Precautions for the Proper Usage of Polyurethanes, Polyisocyanurates, and Related Materials: Technical Bulletin 107, Second Edition", Upjohn Chemical Division, (1980).
- "Further Development of a Test Method for the Assessment of the Acute Inhalation Toxicity of Combustion Products", #PB82-217886, Levin: U. S. Dept. of Commerce, (1982).
- "Polymer Degradation During Combustion", #NBS-GCR-82-403, U. S. Dept. of Commerce, (1982).
- "Calculation of the Heat Release Rate by Oxygen Consumption for Various Applications", #NBSIR 81-2427-1, U. S. Dept. of Commerce, (1982).
- "Upholstered Furniture Heat Release Rates Measured with a Furniture Calorimeter", #NBSIR 82-2604, U. S. Dept. of Commerce, (1982).
- "Understanding Polymer Flammability", Dow Chemical, (1983).
- "Dangerous Properties of Industrial Materials, Sixth Edition", N. I. Sax: Reinhold Van Nostrand co, New York, N.Y. (1984).
- "Fire Behavior of Upholstered Furniture", NBS Monograph 173, Babrauskas & Krasny: U. S. Dept. of Commerce, (1985).

## WARNING

Potential hazards associated with flexible polyurethane foam arise from FIRE and TOXIC THERMAL DECOMPOSITION PRODUCTS and may result from improper disposal and/or mis-application.

Flexible polyurethane foams, in common with other organic materials such as paper, wood, cotton and rubber, can present unreasonable fire hazards when exposed to ignition sources in air. Once ignited, these foams melt to form flammable liquids which may spread flame rapidly and produce intense heat, dense smoke and toxic gases.

- Store buns, sheets and fabricated items indoors under sprinkler protection.
- Do not smoke or use naked lights, open flames, exposed electrical heating elements or other ignition sources near stored flexible foam.
- Be aware that terms like "fire retardant" and "flame resistant" sometimes used to describe flammability properties, do not mean fire safety under all conditions and that small-scale fire tests are NOT INTENDED TO REFLECT HAZARDS PRESENTED BY THESE OR ANY OTHER MATERIAL UNDER ACTUAL FIRE CONDITIONS.

If foam starts burning, follow established fire emergency procedures and exit the area immediately.

**GREAT WESTERN**

## FOAM PRODUCTS

Cust. \_\_\_\_\_

Part No. 4250 DIAM

Density \_\_\_\_\_

No. Pcs. \_\_\_\_\_

All Foam Prefixes of V, HR, or F. Meets the requirements of the Bureau of Home Furnishing Technical Bulletin Number 117

# WARNING

## URETHANE FOAM IS FLAMMABLE!

DO NOT EXPOSE URETHANE FOAMS TO OPEN FLAMES OR ANY OTHER DIRECT OR INDIRECT HIGH TEMPERATURE IGNITION SOURCES SUCH AS BURNING OPERATIONS, WELDING, BURNING CIGARETTES, SPACE HEATERS OR NAKED LIGHTS.

ONCE IGNITED, URETHANE FOAMS WILL BURN RAPIDLY, RELEASING GREAT HEAT AND CONSUMING OXYGEN AT A HIGH RATE. IN AN ENCLOSED SPACE THE RESULTING DEFICIENCY OF OXYGEN WILL PRESENT A DANGER OF SUFFOCATION TO THE OCCUPANTS. HAZARDOUS GASES RELEASED BY THE BURNING FOAM CAN BE INCAPACITATING OR FATAL TO HUMAN BEINGS IF INHALED IN SUFFICIENT QUANTITIES.

Home

Home  
FURNITURE

LOAD SEQUENCE  
1 5

CUSTOMER	SHIP DATE	ERC NO.	ITEM	LABEL	CUSTOMER PRO
00000000	11/1/71	00000000	000	00000	00000000000000
QUANTITY	THICK	WIDTH	LENGTH	COMPRESSION	
1	1	00	000	00000	00000000
PATTERN					
00000000					
STYLE	DESCRIPTION			PACKAGE TYPE	
				0000	

UNDER PENALTY OF LAW  
THIS TAG MUST BE REMOVED  
EXCEPT BY THE CONSUMER

ALL NEW MATERIAL CONSISTING OF

## URETHANE FOAM

REC. NO. VA 650	CERTIFICATION
This article is made in compliance with an act of the State of California, Chapter 1000, Section 100000, approved April 24, 1971, which requires that all urethane foam materials in this state be certified in accordance with law.	This article is made by the manufacturer that the materials in this article are certified in accordance with law.

MADE BY  
E. R. CARPENTER COMPANY, INC.

DATE OF DELIVERY



**WARNING**

Do not use oil cushion in the presence of act  
vulcanized adhesives or the volatile oxidizing  
compounds since they can ignite readily and  
cause the loss of space



## WARNING

one. Structures used in the home such as  
bunk beds, tables, chairs, lampshades, seats  
or cushions, furniture, clothing and under  
garments are items controlled by the Department  
of Commerce. National Bureau of Standards  
Specimens 78-1013, 78-1436 and 78-1092,  
originally from the Soviet Union, when received  
in the United States, are subject to export controls  
under E.O. 11652. These items are placed in a  
black category rather than any other commodity used under  
E.O. 11652. As such, sold in the U.S. is required to  
have ECCN 99-1702.

New Country Club  
9/16

33942

334742

**THIS FOAM CAN BURN FAST**

**WHEN IGNITED, THIS FOAM BURNS RAPIDLY, RESULTING IN GREAT HEAT, GENERATING DANGEROUS AND POTENTIALLY TOXIC GAS AND THICK SMOKE AND CONSUMING OXYGEN. BURNING FOAM CAN BE HARMFUL OR FATAL TO PEOPLE.**

DO NOT EXPOSE THIS FOAM TO AN  
OPEN FLAMES, SPARKS OR OTHER  
HEAT SOURCES. DO NOT SMOKE IN  
THIS FOAM.

**IF FOAM STARTS  
BURNING-GET OUT.**

**.SC0 000336**

## THIS FOAM CAN BURN FAST

WHEN IGNITED, THIS FOAM BURNS RAPIDLY, RESULTING IN GREAT HEAT, GENERATING DANGEROUS AND POTENTIALLY TOXIC GAS AND THICK SMOKE AND CONSUMING OXYGEN. BURNING FOAM CAN BE HARMFUL OR FATAL TO PEOPLE.

DO NOT EXPOSE THIS FOAM TO  
ANY OPEN FLAMES, SPARKS OR  
OTHER HEAT SOURCES. DO NOT  
SMOKE NEAR THIS FOAM.

F FOAM STARTS  
CHANG -EST GGT-

# WARNING

**TO: Shippers, Warehousemen, Handlers, Installers**

to bulk storage of foam care should be taken to keep foam away from open flame, sparks, burning cigarettes, naked light, space heaters or any other ignition sources. When ignited, this foam burns rapidly consuming oxygen, generating great heat, thick smoke and toxic gas.

IF FCAIN STARTS BURNING FOLLOW ESTABLISHED  
FIRE EMERGENCY PROCEDURES AND EXIT THE AREA  
IMMEDIATELY--

Do not install cushion in the presence of solvent-based adhesives or use volatile cleaning compounds since they can ignite readily and cause the foam to ignite.

**TO: CONSUMER**

Many products used in the home burn such as fabrics and plastics containing foam in chairs, furniture, bedding and under carpets. Accidents have occurred by the Department of Commerce, Bureau of Standards Reports NBS-78-78-430 and 78-1054, which state that carpets which installed horizontally under wall-to-wall carpeting are a fire or toxic hazard than any other carpeting underlayment. All Carpet sold in this U.S.A. must pass DOEFEI-70.

## IMPORTANT INFORMATION

This product contains urethane foam. URETHANE FOAM IS FLAMMABLE. Sources of heat or fire, including smoldering cigarettes, can cause urethane foam to ignite. Once ignited, urethane foam may burn rapidly, consuming oxygen at a high rate and emitting toxic gases, either of which can be incapacitating or, in certain conditions, even fatal.



INDUSTRIES, INC.

P. O. BOX 26  
NEWTON, NORTH CAROLINA 28658  
PHONE 704-464-8315

Planning and Evaluation, Consumer Product Safety Commission, Washington, D.C. 20207; (301) 504-0416, Ext. 2264.

#### **SUPPLEMENTARY INFORMATION:**

##### **A. Estimated Burden**

The Commission staff estimates that there are ten firms required to annually submit the required information. The staff further estimates that the average number of hours per respondent is four per year, for a total of 40 hours of annual burden.

##### **B. Request for Comments**

The Commission solicits written comments from all interested persons about the proposed collection of information. The Commission specifically solicits information relevant to the following topics:

- Whether the collection of information described above is necessary for the proper performance of the Commission's functions, including whether the information would have practical utility;
- Whether the estimated burden of the proposed collection of information is accurate;
- Whether the quality, utility, and clarity of the information to be collected could be enhanced; and
- Whether the burden imposed by the collection of information could be minimized by use of automated, electronic or other technological collection techniques, or other forms of information technology.

Dated: April 1, 1999.

Sadye E. Dunn,

Secretary, Consumer Product Safety Commission.

[FR Doc. 99-8497 Filed 4-5-99; 8:45 am]

BILLING CODE 6355-01-P

#### **CONSUMER PRODUCT SAFETY COMMISSION**

##### **Petition Requesting Labeling Rule for Polyurethane Foam in Upholstered Furniture**

**AGENCY:** Consumer Product Safety Commission.

**ACTION:** Notice.

**SUMMARY:** The Commission has received a petition from the National Association of State Fire Marshals requesting that the Commission require labels warning that polyurethane foam in upholstered furniture poses a fire hazard under the Flammable Fabrics Act. The Commission solicits written comments concerning the petition.

**DATES:** Comments on the petition should be received in the Office of the Secretary by June 7, 1999.

**ADDRESSES:** Comments, preferably in five copies, on the petition should be mailed to the Office of the Secretary, Consumer Product Safety Commission, Washington, DC 20207, telephone (301) 504-0800, or delivered to the Office of the Secretary, Room 501, 4330 East-West Highway, Bethesda, Maryland 20814. Comments may also be filed by telefacsimile to (301) 504-0127 or by email to cpsc-os@cpsc.gov. Comments should be captioned "Petition FP 99-1, Petition for Labeling of Polyurethane Foam." A copy of the petition is available for inspection at the Commission's Public Reading Room, Room 419, 4330 East-West Highway, Bethesda, Maryland.

**FOR FURTHER INFORMATION CONTACT:** Rockelle Hammond, Office of the Secretary, Consumer Product Safety Commission, Washington, D.C. 20207; telephone (301) 504-0800, ext. 1232.

**SUPPLEMENTARY INFORMATION:** The Commission has received correspondence from the National Association of State Fire Marshals ("NASFM") that requests the Commission to issue a rule under the Flammable Fabrics Act ("FFA").<sup>1</sup> NASFM asserts that polyurethane foam in upholstered furniture poses an unreasonable risk of fire because once ignited it burns rapidly and emits toxic gases. NASFM asks the Commission to require that upholstered furniture manufacturers and retailers provide flammability warnings to the public. The Commission is docketing the correspondence as a petition under provisions of the FFA, 15 U.S.C. 1191-1204.

Interested parties may obtain a copy of the petition by writing or calling the Office of the Secretary, Consumer Product Safety Commission, Washington, DC 20207; telephone (301) 504-0800. A copy of the petition is also available for inspection from 8:30 a.m. to 5 p.m., Monday through Friday, in the Commission's Public Reading Room, Room 419, 4330 East West Highway, Bethesda, Maryland.

<sup>1</sup> The Commission voted 2-1 to publish this notice requesting comments on the petition. Chairman Ann Brown and Commissioner Thomas Moore voted in favor of publication while Commissioner Mary Sheila Gall voted against it for the reason provided in a separate statement. A copy of Commissioner Gall's statement is available from the Office of the Secretary.

Dated: April 1, 1999.

Sadye E. Dunn,

Secretary, Consumer Product Safety Commission.

[FR Doc. 99-8496 Filed 4-5-99; 8:45 am]

BILLING CODE 6355-01-P

#### **DEPARTMENT OF DEFENSE**

##### **Office of the Secretary**

##### **Submission of OMB review; comment request**

**ACTION:** Notice.

The Department of Defense has submitted to OMB for clearance, the following proposal for collection of information under the provisions of the Paperwork Reduction Act (44 U.S.C. Chapter 35).

**TITLE, ASSOCIATED FORM, AND OMB NUMBER:** Nutritional Assessment and Dietary Intake; AF Form 2572; OMB Number 0701-0130.

**TYPE OF REQUEST:** Reinstatement.

**NUMBER OF RESPONDENTS:** 12,000.

**RESPONSES PER RESPONDENT:** 1.

**ANNUAL RESPONSES:** 12,000.

**AVERAGE BURDEN PER RESPONSE:** 15 minutes.

**ANNUAL BURDEN HOURS:** 3,000.

**NEEDS AND USES:** Respondents are medical beneficiaries referred for nutrition counseling. The information is used within individual military hospital settings only. Information is requested from individuals to determine their usual daily food intake and exercise patterns. The diet counselor assesses this information and determines adequacy of the diet, as well as conformance of the usual diet with prescribed dietary guidelines. This assessment is required by the Joint Commission on Accreditation of Healthcare Organizations.

**AFFECTED PUBLIC:** Individuals or households.

**FREQUENCY:** On occasion.

**RESPONDENT'S OBLIGATION:** Voluntary.

**OMB DESK OFFICER:** Mr. Edward C. Springer. Written comments and recommendations on the proposed information collection should be sent to Mr. Springer at the Office of Management and Budget, Desk Officer for DoD, Room 10236, New Executive Office Building, Washington, DC 20503.

**DOD CLEARANCE OFFICER:** Mr. Robert Cushing. Written requests for copies of the information collection proposal should be sent to Mr. Cushing, WHS/DIOR, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302.



UNITED STATES OF AMERICA  
FEDERAL TRADE COMMISSION  
WASHINGTON, D.C. 20580

Office of the Secretary

July 1, 1999

CPSC/OFFICE OF  
THE SECRETARY

1999 JUL 12 A 11

Rocco J. Gabriele, President  
The National Association of State Fire Marshals  
1319 F Street, N.W. - Suite 301  
Washington, DC 20004

Re: Petition for Rulemaking: Fire Hazard Warning  
Label on Certain Upholstered Furniture

Dear Mr. Gabriele:

This letter responds to the above-referenced Petition requesting that the Federal Trade Commission commence a trade regulation rule proceeding to require manufacturers and retailers of upholstered furniture containing polyurethane foam to affix flammability warning labels to such furniture. Your petition was also directed to the Consumer Product Safety Commission (CPSC).

As you know, CPSC has direct authority under the Flammable Fabrics Act to issue flammability standards or require labeling for upholstered furniture. CPSC published a Federal Register notice soliciting comment on your latest petition, 64 Fed. Reg. 16,711 (April 6, 1999). Further, CPSC staff has informed FTC staff that it will consider alternatives to address furniture flammability risks, including possible warning label requirements, as part of an ongoing rulemaking proceeding under the Flammable Fabrics Act.<sup>1</sup> Accordingly, the Commission believes that CPSC is the most appropriate agency at this time to address the issues raised in your petition.

As a result, the Commission has determined not to initiate a rulemaking proceeding at this time and to refer your petition and supporting materials to CPSC. This determination does not preclude the Commission from considering, at a later date, a possible rulemaking proceeding, or from taking whatever other action it deems appropriate.

By direction of the Commission.

  
Benjamin J. Berman  
Acting Secretary

cc: Ms. Sayde Dunn  
Office of the Secretary  
Consumer Product Safety Commission  
4330 East West Highway  
Bethesda, MD 20814

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<sup>1</sup> This ongoing rulemaking is in response to your association's prior petition requesting that CPSC develop a product safety standard addressing risks of death and injury from upholstered furniture fires.



UNITED STATES  
CONSUMER PRODUCT SAFETY COMMISSION  
WASHINGTON, DC 20207

**Memorandum**

Date: February 28, 2001

**TO** : Dale Ray, Project Manager, Upholstered Furniture

**THROUGH** : Dr. Robert B. Ochsman, Director, *RB*  
Division of Human Factors  
Hugh McLaurin, Associate Executive Director *HL*  
Directorate for Engineering Sciences

**FROM** : Carolyn Meiers, Engineering Psychologist *cm*  
Division of Human Factors

**SUBJECT** : Petition Requesting a Labeling Rule for  
Polyurethane Foam in Upholstered Furniture (FP 99-1)

This memorandum consists of two parts. The first part presents a Human Factors assessment of whether labeling of polyurethane foam, as requested in a petition from the National Association of State Fire Marshals (NASFM), would protect consumers from upholstered furniture fires. The second part presents an analysis of comments received in response to the Commission's April 6, 1999, Federal Register notice regarding the petition.

**PART I: LABELING OF POLYURETHANE FOAM**

**I. BACKGROUND**

In March 1999, the National Association of State Fire Marshals (NASFM) petitioned the U.S. Consumer Product Safety Commission (CPSC) to develop a rule under the Flammable Fabrics Act that would require labels to warn the public that polyurethane foam, used as a cushioning material in upholstered furniture, poses a fire hazard. NASFM refers to polyurethane foam in general terms and does not distinguish between foam that is treated with fire retardants (FR foam) and foam that is not treated (non-FR foam).

NASFM states that polyurethane foam poses a hazard because it burns very quickly, emits toxic gases, and releases intense heat at such a rapid rate that room temperature is quickly elevated to a degree that flashover occurs. Flashover is the point at which all contents of the room are ignited. NASFM believes that the textiles used as a covering for the foam also ignite easily, but that they provide little fuel and energy to the fire.

NASFM requests that precisely the same industrial flammability warnings used by foam producers on polyurethane foam be attached to finished pieces of residential

upholstered furniture. NASFM submitted examples of a number of labels but did not specify a preference for any one label.

Most upholstered furniture carries a voluntary label provided by the Upholstered Furniture Action Council (UFAC) informing consumers that although the furniture is resistant to cigarette ignition, upholstery fires are still possible. It advises that some materials used in the upholstered furniture will burn rapidly and emit toxic gases. The label reminds consumers to practice careful smoking habits and to use smoke detectors.

## **II. DISCUSSION**

### **Warning Label Effectiveness**

Labeling of polyurethane foam as hazardous is not likely to be effective in reducing upholstered furniture fires for the following reasons. The majority of upholstered furniture fires are started by smoking materials, particularly cigarettes.<sup>1</sup> Polyurethane foam generally resists cigarette ignition. A label alerting consumers to the hazards associated with polyurethane foam would not be applicable to these situations and, therefore, would likely have no effect in reducing deaths or injuries in this category of upholstered furniture fires.

A CPSC study found that "childplay with lighters and matches, especially among children under 5, constitutes a major component of the ... furniture fire problem."<sup>2</sup> Warning labels are unlikely to have an effect in reducing deaths and injuries from upholstered furniture fires started by these small, open flames. Because children under five cannot read or comprehend the criticality of warning labels, the burden for complying with the safety precautions on a warning label rests with parents and caregivers.

To avoid upholstered furniture fires in which small, open flames are implicated, parents and caregivers would be advised to keep matches and lighters out of the reach of children. However, even when adults attempt to respond responsibly to this safety message, children are able to circumvent the safety restrictions. The motor abilities of the children in the age range in which childplay fires occur make it nearly impossible to find a storage place for lighters and matches that prevents children from accessing them while allowing the lighters and matches to be convenient for use.

A warning label alerting consumers to the hazards of polyurethane foam would not offer any unique, or more effective, safety measures to avoid igniting the foam than those safety precautions already required to prevent upholstered furniture fires in

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<sup>1</sup> Ault, K., Levenson, M. (2001). Upholstered Furniture Fire Loss Estimates 1980-1998. U.S. Consumer Product Safety Commission: Washington, DC.

<sup>2</sup> Ray, Dale. (1997). Regulatory Options Briefing Package on Upholstered Furniture Flammability. U.S. Consumer Product Safety Commission: Washington, DC.

general. If a consumer had been careless with smoking materials around upholstered furniture before being exposed to the label, the label would not be effective in changing that ingrained behavior and attitude. Research indicates that a warning label is less likely to be effective if a consumer's fire-safety attitudes and behavior patterns are inconsistent with the warning.<sup>3</sup> Warnings are the least effective approach to safety because they focus on modifying human behavior and shifting responsibility for safety to the consumer.

Designing a hazard out of a product is the most effective safety strategy because it focuses on passive measures that do not require consumers to take action. Performance requirements that address the flammability of upholstered furniture will likely be more effective in reducing fire injuries and deaths than warning labels.

### **Suitability of Proposed Labels for Consumer Use**

The industry labels submitted by NASFM are unsuitable for consumer use. The labels refer to conditions that do not apply to residential use of polyurethane foam. This inappropriate information impacts the credibility and persuasiveness of the safety messages and can result in consumers disregarding them.

The length, language, and format of the proposed warning labels also make them unsuitable for consumer application. Research on warning labels indicates that the safety message should be written and formatted in a manner that is concise and easily understood.<sup>4</sup> Technical language and industrial references used in the proposed warning labels affect the ability of the consumer to fully understand the safety message.

It should be noted, based on the discussion of warning label effectiveness, that any warning label regarding the hazards of polyurethane foam, even if it were designed to be consumer-friendly, is not likely to be successful in reducing the number of upholstered furniture fires.

### **UFAC Label**

Furniture manufacturers participating in the UFAC Voluntary Action Program agree to display the UFAC hangtag on their upholstered furniture. (Most of the larger producers of furniture are believed to be UFAC participants.<sup>5</sup>) The hangtag is attached to the furniture and is visible to consumers at point-of-purchase. Consumers are responsible for the removal of the hangtag once the furniture is delivered.

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<sup>3</sup> Lehto, M.R. and Miller, J.M. (1987). Warnings, Volume I, Fundamentals, Design, and Evaluation Methodologies, p.141. Fuller Technical Publications: Ann Arbor, MI

<sup>4</sup> American National Standard (ANSI) Z535.4-1998. Product Safety Signs and Labels. National Electrical Manufacturers Association (NEMA): Rosslyn, VA.

<sup>5</sup> Smith, C. (1996). Economic Considerations for Upholstered Furniture Petition FP 93-1. Memo to 1997 Briefing Package on Upholstered Furniture. U.S. Consumer Product Safety Commission: Washington DC

A label that addressed the hazards of polyurethane foam would duplicate information provided on the UFAC label. The UFAC label informs consumers that although the upholstery fabric is resistant to cigarette ignition, other materials used in upholstery can burn rapidly and emit toxic gases when ignited. These are the same consequences that occur when polyurethane foam burns. The UFAC label instructs consumers to "practice careful smoking habits." This is the same safety precaution that must be taken to prevent the ignition of polyurethane foam. Duplication of information may be detrimental to the communication of safety messages. Research indicates that adding redundant information to warning labels may be viewed negatively by the consumer.<sup>6</sup>

### **III. SUMMARY AND CONCLUSION**

Warnings are the least reliable approach to safety because they focus on modifying human behavior and shifting responsibility for safety to the consumer. Performance requirements that address the flammability of upholstered furniture will likely be more effective and reliable in reducing upholstered furniture fires because they focus on passive measures that do not require an action on the part of the consumer.

## **PART II: RESPONSE TO COMMENTS FROM ANPR**

### **I. BACKGROUND**

The Commission published a Federal Register Notice on April 6, 1999 to solicit comments on the petition that requests a labeling rule for polyurethane foam in upholstered furniture. Twenty commenters responded. Fourteen were in favor of a labeling rule and three were opposed. Three commenters did not specifically refer to the labeling rule, but stated they were in favor of mandatory flammability standards for upholstered furniture. The distribution of the responses is outlined below followed by a discussion of the issues raised in the comments.

#### **A. In Favor of Labeling**

Petitioner, Representative of NASFM  
State Fire Marshal of Louisiana  
State Fire Marshal of Indiana  
International Association of Fire Chiefs  
National Volunteer Fire Council  
Consumers Union  
Consumer Federation of America  
The Decorative Fabrics Association  
The Coalition of Converters of Decorative Fabrics  
Ventex Textiles

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<sup>6</sup> Lehto, M.R. and Miller, J.M. (1987). Warnings, Volume I, Fundamentals, Design, and Evaluation Methodologies. Fuller Technical Publications: Ann Arbor, MI



Burn Survivor  
Student from Florida International University  
Consumer from Florida  
Consumer, no state given

**B. Opposed to Labeling**

Polyurethane Foam Association  
American Furniture Manufactures Association  
Society of the Plastics Industry

**C. In Favor of Mandatory Flammability Standards**

Firefighter from Delaware  
Consumer from Michigan  
Consumer, no state given

## **II. DISCUSSION OF COMMENTS**

### **A. In Favor of Labeling**

1. **Comment:** A label would educate consumers to recognize the danger confronting them from the high flammability of polyurethane foam.

**Response:** The protection that is offered by labels is the heightened awareness of consumers about the flammability of polyurethane foam and the assumption that this will increase their vigilance with tobacco products and small, open flames around upholstered furniture. This heightened awareness is beneficial only if a consumer's current fire-safety attitudes and behavior patterns are consistent with the safety precautions stated in the warning. However, if a consumer's fire-safety attitudes, behavior patterns, and perceptions of risk are inconsistent with the safety precautions, the warning is unlikely to elicit the desired behavior.<sup>7</sup>

Educating a consumer about risks associated with polyurethane foam does not guarantee compliance with the safety precautions, particularly as the effectiveness of the safety precautions are dependent on the continual vigilance and actions of consumers.

The limitations of the educational benefits of warning labels are evident when informed adults make reasonable attempts to prevent children from accessing lighters and matches and these attempts are circumvented.

2. **Comment:** Labels would provide a reasonable, minimal measure of protection. (one commenter)

**Response:** The UFAC label already provides a reasonable, minimal level of protection against the hazards of polyurethane foam. An additional label with redundant information may negatively impact consumer behavior. Consumers may become confused and frustrated in an attempt to assimilate the differences and implications of the various labels and begin to doubt the credibility of the safety messages.

### **B. Opposed to Labeling**

1. **Comment:** The labeling proposal is a duplication of effort because the ANPR already listed labeling as an option.

**Response:** Staff agrees that the proposed labeling is a duplication of effort because labeling has already been cited as an option. However, Human Factors staff believes that labeling is the least effective means to achieve a reduction in upholstered furniture fires. Performance requirements that address the flammability of upholstered

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<sup>7</sup> Lehto, M.R. and Miller, J.M. (1987). Warnings, Volume I, Fundamentals, Design, and Evaluation Methodologies, p.141. Fuller Technical Publications: Ann Arbor, MI

furniture will likely be more effective in reducing fire injuries and deaths than warning labels.

**2. Comment:** Transferring a label from a commercial user to a retail consumer is inappropriate. The industry label is designed for a setting where foam is stacked in large quantities and is exposed to intense heat sources such as welding operations.

**Response:** Human Factors agrees that the proposed industry labels are not suitable for consumer use. The labels refer to conditions that do not apply to residential use of polyurethane foam. Irrelevancies impinge on the credibility and persuasiveness of the warning labels and may cause consumers to disregard them. Other factors that make the proposed labels unsuitable for consumer use are their length, language, and format. The technical language used in the proposed warning labels is inappropriate for consumer use.

It should be noted, based on the discussion of warning label effectiveness, that any warning label regarding the hazards of polyurethane foam, even if it were designed to be consumer-friendly, would likely not be successful in reducing the number of upholstered furniture fires.

**3. Comment:** Warnings more appropriate for a residential setting are already provided by the UFAC label. The petitioner did not demonstrate any insufficiencies in this label which would be overcome by the proposed industrial label.

**Response:** Human Factors staff agrees with the commenter that the petitioner has not shown that there are deficiencies in the UFAC label that can be corrected by using the proposed industrial label. The UFAC label has a short, simple message that is easier for consumers to understand. It informs consumers that although the furniture is designed to resist cigarette ignition, other materials used in upholstery can ignite, burn rapidly, and emit toxic gases. The proposed labels offer no unique or new safety precautions that would help consumers prevent the foam from igniting..



UNITED STATES  
CONSUMER PRODUCT SAFETY COMMISSION  
WASHINGTON, DC 20207

**Memorandum**

Date: September 13, 2000

TO : Dale Ray, Project Manager, Upholstered Furniture  
Directorate for Economic Analysis

THROUGH: Andrew G. Stadnik, AED Laboratory Sciences  
Robert T. Garrett, Division Director, Electrical Engineering *RTG*

FROM : Linda Fansler, Division of Electrical Engineering *LF*

SUBJECT : Response to Petition Requesting Labeling Rule for Polyurethane Foam  
in Upholstered Furniture

This memorandum provides the Laboratory Science's response to the comment made by the American Furniture Manufacturers Association (AFMA) regarding Petition FP 99-1, Petition for Labeling of Polyurethane Foam.

**ISSUE:** TB-117 provides no increased safety

**COMMENT:** "The petitioner's position on labeling may originate from its oft-stated views on the efficacy of TB-117 polyurethane foam in small open flame incidents, as well in fires it mischaracterizes as small open flame scenarios. [However] TB-117 foam is not designed to thwart residential fires in their advanced stages, where it may be the "second" or "fifth" item ignited. Nor is it adapted to the public occupancy and transportation contexts cited by NASFM." (*American Furniture Manufacturers Association, June 7, 1999*)

**RESPONSE:**

Our tests support AFMA's contention. Laboratory Sciences tested components taken from upholstered chairs manufactured to meet California's Technical Bulletin, TB 117.<sup>1</sup> The upholstery fabric was exposed to a 20-second flame, the fabric readily ignited, and the polyurethane foam quickly became involved in the fire. In one test where the mockup was left to burn freely, the fire entirely consumed the fabric and foam in about 12 minutes. The polyurethane foam did not resist ignition in these tests, in spite of previously passing TB 117's flammability test for resilient cellular material.

In full-scale chair tests, TB 117 foam performed no better than untreated foam.<sup>1</sup> A 15-second butane flame applied to the seating area crevice of two comparable upholstered chairs – one with TB 117 foam, the other with non-flame resistant foam – ignited both

chairs. The chair with TB 117 foam burned slightly more slowly. It burned 11 inches above the crevice (marking the end of the test) 12 seconds after the chair containing non-flame resistant foam. However, neither chair self-extinguished.

The State of California requires all furniture for sale to be fire retardant as defined by TB 117.<sup>2</sup> Although TB 117 is mandatory in the State of California, it is a "minimum standard"<sup>3</sup> and is based on bench scale component fire tests. TB 117 requires all filling material used in upholstered furniture to be fire and smolder (cigarette) resistant and specifies component test procedures for different types of filling materials. To meet TB 117, low levels of flame retardant chemicals are added to polyurethane foam. Man-made filling materials, such as polyester fiberfill, typically need no chemicals to meet TB 117.

Our experience suggests that the primary influence contributing to an upholstered furniture's combustion is the fire resistance of the upholstery fabric. However, for some upholstery fabrics, filling materials may contribute to the fabrics' s ignition resistance from a small open flame.<sup>4</sup>

## REFERENCES

1. Upholstered Furniture Flammability Briefing Package, Dale R. Ray, Project Manager, Directorate for Economic Analysis, CPSC, October 1997.
2. Technical Bulletin 117, State of California, Department of Consumer Affairs, Bureau of Home Furnishings And Thermal Insulation, January 1980.
3. Flammability Information Package, Flammability Questions And Answers, State of California, Department of Consumer Affairs, Bureau of Home Furnishings And Thermal Insulation, January 1992.
4. Memorandum to Dale Ray, EC, Program Manager, from Joseph J. Puskar, Andrew J. Bernatz, LS, Ignition Tests of Filling Materials, June 2000, DRAFT, CPSC.



United States  
**CONSUMER PRODUCT SAFETY COMMISSION**  
Washington, D.C. 20207

**MEMORANDUM**

**DATE:** March 30, 2001

**TO :** Dale R. Ray, Upholstered Furniture Project Manager

**Through:** Warren J. Prunella, AED, Economics

**FROM :** Charles Smith, Economics *CS*

**SUBJECT:** Petition Requesting a Labeling Rule for Polyurethane Foam in Upholstered Furniture

This memorandum discusses economic issues associated with Petition FP 99-1 to issue a mandatory labeling rule that would inform consumers of hazards presented by polyurethane foam used as cushioning materials in upholstered furniture.

**Background**

In March 1999, the National Association of State Fire Marshals (NASFM) petitioned the U.S. Consumer Product Safety Commission (CPSC) to establish a rule that would require upholstered furniture manufacturers to warn consumers about the fire hazards presented by flexible urethane foam filling materials used in furniture. The petitioner notes that suppliers of urethane foam provide warnings regarding the flammable nature of urethane foam, and precautions for safe storage and use of the materials, to upholstered furniture manufacturers. NASFM seeks to have such warnings passed on to consumers.

**Use of Urethane Foam in Furniture Manufacturing**

According to a survey of upholstered furniture manufacturers conducted under contract for the CPSC in 1995, nearly all seat cushions, most back cushions, and some furniture arms contained urethane foam, either alone or topped by polyester fiberfill padding.<sup>1</sup> Typical seat cushions reportedly are 5" by 24" by 24", or 20 board feet (a board foot is 12" by 12" by 1"). Based on the survey data, the Directorate for Economic Analysis estimates that roughly 2.5 billion board feet of urethane are used annually in the production of household upholstered furniture.<sup>2</sup> Some larger furniture manufacturers fabricate their own seat cushions from purchased urethane slab stock.<sup>3</sup> However, most manufacturers purchase fabricated urethane cushions, which often are wrapped or bonded with polyester fiberfill. Many other variations of urethane cushions are also purchased, including cushions that combine different densities of foam, cushions with springs, and down-topped cushions encased in ticking fabric.

<sup>1</sup> Smith, Charles, "Results of Surveys of Upholstered Furniture Manufacturers," Directorate for Economic Analysis, CPSC, September 1996.

<sup>2</sup> Based on the assumptions that about 14 million chairs and 16 million sofas and loveseats are produced annually, and average urethane used is 40 board feet per chair and 120 board feet per sofa.

<sup>3</sup> Furniture manufacturers that fabricate their own cushions reportedly include La-Z-Boy, Rowe, Franklin, Palliser, Klaussner, and Action-Lane.

According to an official with one of the larger urethane foam manufacturing firms, a rough estimate of the overall market for urethane foam consumed by the residential and contract furniture markets would be about 80 percent conventional foam (*i.e.*, foam without FR chemicals), 15 percent FR-treated foam that complies with California's mandatory standard, Technical Bulletin 117, and 5 percent foam that includes melamine, used in furniture complying with more stringent flammability requirements such as California's Technical Bulletin 133 and the Boston Fire Code. These more stringent requirements typically apply to furniture for commercial or public occupancy uses.

## **Upholstered Furniture Fire Losses**

The Directorate for Epidemiology estimates that during 1998, about 9,400 residential fires involved ignitions of upholstered furniture (from all ignition sources). These fires resulted in 480 deaths, 1,340 injuries, and \$190.8 million in property damage.<sup>4</sup> The total societal costs of upholstered furniture fires in 1998 amounted to about \$2,819 million.<sup>5</sup> Since flexible polyurethane foam has been a very common filling material used in the manufacture of residential upholstered furniture (discussed below), many of these fires, and their associated societal costs, involved the material.

## **Potential Risk Reduction**

In their analysis of the petition, the CPSC's Division of Human Factors concluded that the warnings provided by urethane foam suppliers to furniture manufacturers include references to some ignition sources that are not found in residential settings; and including these in a label for consumers would cause confusion and would cast doubt on the credibility of the message.<sup>6</sup> Furthermore, the experience of the CPSC's Engineering Laboratory suggests that "what most influences furniture's combustion is not the filling material at all, but the fire resistance of the upholstery fabric."<sup>7</sup> The Division of Human Factors concludes that, "even a flammability warning designed for upholstered furniture fabric would not likely be effective in reducing or eliminating upholstered furniture fires."<sup>8</sup> This conclusion is based on the ability of children to circumvent restrictions on their access to lighters and matches, and the likelihood that adults will inadvertently leave lighters and matches within the reach of children.

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<sup>4</sup> Ault, Kimberly, and Levinson, Mark, "Upholstered Furniture Fire Loss Estimates, 1980-1998," Directorate for Epidemiology, U.S. Consumer Product Safety Commission, December 2000.

<sup>5</sup> While the Commission does not endorse any measure of the value of life, for analytic purposes staff assigns a statistical value of \$5 million for each death (consistent with the general range of the statistical value of life estimates published in the literature). Nonfatal injuries are assigned a value of \$170,000 each, based on the analysis of burn injury costs reported in the August 1993 report sponsored by the CPSC, "Societal Costs of Cigarette Fires." (480 deaths x \$5MM) + (1,340 injuries x \$170,000) + \$190.8 MM property loss = \$2,819 million.

<sup>6</sup> Meiers, Carolyn, "Petition Requesting a Labeling Rule for Polyurethane Foam in Upholstered Furniture (FP 99-1)," (memorandum to Dale Ray, CPSC Project Manager for Upholstered Furniture) Division of Human Factors, U.S. Consumer Product Safety Commission, January, 2001.

<sup>7</sup> Fansler, Linda, "Response to Petition Requesting Labeling Rule for Polyurethane Foam in Upholstered Furniture," (memorandum to Dale Ray, CPSC Project Manager for Upholstered Furniture) Engineering Laboratory, U.S. Consumer Product Safety Commission, December 22, 1999.

<sup>8</sup> Meiers, *op.cit.*

In addition to the factors cited by the CPSC's Engineering Laboratory and Human Factors, other considerations would influence the marginal effect of a warning label that specifically addresses the polyurethane foam component. These include the presence of "hang tags" on furniture items manufactured by participants in the Upholstered Furniture Action Council (UFAC) program, and the extent to which the public already perceives furniture to be prone to ignition from cigarettes and open flames. Approximately 90 percent of residential furniture is made in compliance with the UFAC program. One element of the program involves the attachment of a hang tags that states (among other information): *"Even with modern UFAC-recommended materials and methods, smoldering cigarettes and other heat or fire sources can cause upholstered furniture fires."* Thus, some written hazard information is already provided to many consumers voluntarily by industry. Therefore, marginal benefits of additional labeling would probably be quite low. Also, the petition is being considered concurrently with a potential mandatory standard to address small open flame ignition hazards of upholstered furniture. Should the commission go forward with a rule that reduces the likelihood that furniture will ignite, the potential benefits from labeling regarding hazards presented by urethane foam would be minimized further.

### **Potential Costs**

Based on estimates provided by a label manufacturer, labels that include information regarding urethane foam would cost furniture manufacturers a few cents each. The exact per-unit cost would depend on quantities ordered.<sup>9</sup> Marginal labor costs to attach labels probably would be very minor, especially if done concurrently with other labels already attached. Labeling probably would result in negligible impact on retail expenditures.

### **Conclusion**

The costs of labels are low, especially in relation to the price of upholstered furniture. There is uncertainty that any positive benefits of labels would result. The decision to accept or deny the NASFM request should not be based on the relationship between the costs and benefits, both of which appear to be low.

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<sup>9</sup> For a 4.5"x 4" label with a string, Artray Label Company, Inc. provided estimates of about \$.04 for an order 50,000 labels to \$.09 for an order of 10,000 labels (January 18, 2001, e-mail)